

able to difficulty of observation as it is to possible specificity by the worm to the eggs of *S. baudinii*. We plan to continue to assess the impact of this apparent egg predator on anurans at LCRS, and to describe more fully the nature of the frog-predator relationship. We encourage others with the opportunity to examine the eggs of *S. baudinii* and other pond-breeding tropical anurans to look for this predatory organism.

We thank Barbara K. Modney for photographing the specimen. The Belize Forestry Department issued permits for research at LCRS and for export of organisms. The Columbus Zoo and Aquarium and the Department of Biological, Geological, and Environmental Sciences of Cleveland State University provided funding that made this research possible. We thank Las Cuevas Research Station and the Natural History Museum, London, for permission to use their site, and the staff at LCRS for aide and expertise in the field. We are grateful to Jon Martin for help in examining and preserving the specimens at LCRS, and to David Green, Charles Bursey, and Skip Sterner for examining the specimens or photographs thereof. Julian C. Lee reviewed the manuscript and provided much helpful advice.

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## CROCODYLIANS

**ALLIGATOR MISSISSIPPIENSIS** (American Alligator). **NEST and NESTLING ECOLOGY.** The ecology of hatchling *Alligator mississippiensis* has been studied over much of its range. Yet, information on the ecology and natural history of *A. mississippiensis* within Arkansas, the northwesternmost part of its range, is particularly sparse. Here we help fill this gap with *A. mississippiensis* observations from southeast Arkansas.

On 7 August 2001, we found the first *A. mississippiensis* nest on record at Arkansas Post National Memorial, Arkansas County since prior to the 1980s (pers. comm., Kevin Eads, Resource Management Specialist, Arkansas Post National Memorial). This nest, located along Alligator Slough (a backwater of the Arkansas River) on the west side of the park, was ca. 2 m from the shore, 30 cm high and 1–1.5 m in diameter, and constructed of grasses and water lily leaves. No female was observed at the nest. We excavated only enough of the nest to reveal > 10 eggs. More eggs were apparent under the first layer, but we chose not to disturb them and repaired our excavation. Further searching of both banks of the slough and the rest of the park did not reveal more nests. Eggs in this nest were evidently close to hatching as Eads (pers. comm.) informed us that the nestlings emerged in mid-September.

At 2200 h on 12 April 2002, we returned to the nest site and observed 22 hatchlings within a 50-m radius of the original nest site. Numerous ghost shrimp (*Natantia* sp.) were present. While observing the hatchlings forage, they appeared to be feeding on these shrimp. Hatchlings averaged 31.6 mm TL (SD = 1.9, N = 5), 14.9 mm SVL (SD = 0.7, N = 5), and 81.7 g (SD = 7.6, N = 3) in mass.

Our observations suggest that spring body sizes of hatchlings

from Arkansas may be substantially smaller than those in other parts of its range. Hatchlings (N = 220) from South Carolina that were 24.5 cm TL (SD = 1.4; 50 g, SD = 5.4) in September reached 36.2 cm TL (SD = 5.4; 128 g, SD = 5.2) the following May (Brandt 1991. *Copeia* 1991:1123–1129). This may indicate slower growth rates in Arkansas. Resource limitations caused hatchling *A. mississippiensis* from the Everglades to grow slower (i.e., ca. 16 cm/yr), and mature at a smaller size and at an older age than those known elsewhere in alligator range (Dalrymple 1996. *Copeia* 1996:212–216). Little research exists on growth rates and seasonal body sizes in *A. mississippiensis* from Arkansas; however, the longer winter may limit resources in a manner similar to the pattern observed in the Everglades, explaining why our May body sizes were smaller than those observed in South Carolina during May (Brandt, *op. cit.*).

The basis of the smaller size of Arkansas hatchlings has management implications because juvenile survivorship is size-specific; probability of death decreases as an individual grows (Rootes et al. 1991. *Estuaries* 14:489–494), and age is often determined by their size. It is crucial to know whether alligator growth is actually slower in Arkansas than in other parts of its range. At reduced growth rates, smaller animals may be vulnerable to a larger predator set for a longer interval. Thus, management of *A. mississippiensis* in Arkansas would require a somewhat different approach than in the more southerly parts of its range. More information is needed regarding growth rates of *A. mississippiensis* in Arkansas to effect proper management.

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## TESTUDINES

**CHELONIIDAE** (Marine Turtle). **NEST PREDATION.** On 19 June 2003 at 0217 h, an Opossum (*Didelphis virginiana*) was observed for 10 min while digging into a marine turtle nest and eating 4 eggs on the beach at St. Lucie Inlet Preserve State Park (SLIPSP) on Jupiter Island, Florida. The predation event was observed using night vision equipment as part of nightly patrols to protect turtle nests from Raccoon (*Procyon lotor*) and Armadillo (*Dasypus novemcinctus*) predation during the nesting season (Engeman et al. 2003. *Biol. Cons.* 113:171–178). After verification of an ongoing predation event, the Opossum was euthanized and removed. Prior to implementing predator removal on this beach, up to 95% of the turtle nests were destroyed annually by Raccoons (Bain et al. 1997. Sea turtle nesting and reproductive success at the Hobe Sound National Wildlife Refuge (Florida), 1972–1995. Report to U.S. Fish and Wildlife Service, ARM Loxahatchee NWR). In recent years, Armadillos, a species exotic to the east coast of Florida, have become severe predators of turtle nests (Bain et al., *op. cit.*; Engeman et al., *op. cit.*). While Foote

(2000. Proc. Sea Turtle Symp. 18:189–190) lists Opossums as incidental predators at marine turtle nests, our observation is the first that identifies an Opossum as a primary predator (excavator) of a marine turtle nest.

Three species of marine turtles nest on the SLIPSP beach: Loggerhead (*Caretta caretta*), Green (*Chelonia mydas*), and Leatherback (*Dermochelys coriacea*). Based on the ca. 60-cm depth of the nest, the nest could have belonged to either a Loggerhead or Green Turtle, but because nearly 90% of the marine turtle nests on the beach are Loggerhead (Engeman et al., *op. cit.*), the Opossum-predated nest most likely was Loggerhead. A Leatherback nest was unlikely, because it was too shallow and Leatherbacks nest infrequently on this beach (Engeman et al., *op. cit.*).

When a mammalian predator is not observed directly, determination of the species responsible for turtle nest predation is typically based on tracks. Our observation indicates that marine turtle researchers should pay close attention to track nuances, because superficial observation of a tail drag in the sand at a predated nest may not implicate an Armadillo as the predator. Care should be taken to also verify the footprints of the animal responsible. Opossum footprints are easily distinguished from Armadillo prints, because Opossum prints are hand-like with five digits on each foot, whereas Armadillo prints have all toes facing forward with claws usually evident and only four digits on the front feet (Murie 1974. A Field Guide to Animal Tracks, 2<sup>nd</sup> Edition. Houghton Mifflin Co., Boston, Massachusetts. 375 pp.).

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**CHELYDRA SERPENTINA** (Snapping Turtle) and **SCAPHIOPUS HOLBROOKII** (Eastern Spadefoot). **PREDATION and DIET.** Snapping turtles are known to have an extremely wide and varied diet (Ernst et al. 1994. Turtles of the United States and Canada. Smithsonian Institution Press, Washington D.C. 578 pp). Here we note predation on the larvae of *S. holbrookii*.

On 16 June 2003, at 1000 h, while conducting fieldwork at the Brookhaven National Laboratory (Upton, Suffolk County, New York, USA [40°53'24"N, 72°52'27"W; WGS84/NAD83]) we observed a female *C. serpentina* submerged in ca. 15 cm of water with several *S. holbrookii* tadpoles clenched in her jaws. This observation was made adjacent to a dirt road in a depression that had filled with water following heavy precipitation. Thousands of *S. holbrookii* tadpoles were observed in the flooded depression, and these tadpoles may constitute an important seasonal food source for *C. serpentina* in temporarily flooded habitats. Predation on *S. holbrookii* by *C. serpentina* has been documented previously (Ernst et al. 1994, *op. cit.*), but to our knowledge, this is the first documentation of predatory interaction for these two species in New York.

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**DEIROCHELYS RETICULARIA** (Chicken Turtle). **DIET.** Predation can be a key factor affecting the diversity and structure of larval aquatic amphibian communities (Azevedo-Ramos et al. 1999. Copeia 1999:22–33; Gomez-Mestre and Keller 2003. Copeia 2003:349–356). The role of reptiles and amphibians as predators of tadpoles may be more widespread than appreciated (e.g., Aresco and Reed 1998. Herpetol. Rev. 29:40; Beard and Baillie 1998. *ibid.*; Gomez-Mestre and Keller 2003). Two recent studies (Jackson 1996. Chelonian Cons. Biol. 2:105–108; Demuth and Buhlmann 1997. J. Herpetol. 31:450–453), based on gut and fecal analyses, have confirmed *Deirochelys reticularia* as a specialized predator of aquatic organisms, chiefly arthropods, in the southeastern U.S. Although Carr (1940. Univ. Florida Publ., Biol. Sci. Ser. 3[1]:1–118; 1952. Handbook of Turtles: The Turtles of the United States, Canada, and Baja California. Cornell Univ. Press, Ithaca, New York. 542 pp.) noted seeing *Deirochelys* feed upon both dead and live tadpoles, neither of the recent studies identified amphibians as an important dietary component. Demuth and Buhlmann (1997, *op. cit.*) suggested, however, that this may relate to the lack of conspicuous, indigestible parts among amphibian larvae, which might conceal their presence because of rapid digestion. Here I report several instances of wild-caught *Deirochelys* consuming a large number and diversity of amphibian larvae offered to them in captivity, as well as an additional observation from nature.

In February 1997, I obtained two gravid female Chicken Turtles (197 and 173 mm plastron lengths) from Grady County, Georgia. Following induction of oviposition via oxytocin injection, turtles were maintained in a tank measuring 71 x 30 cm and filled with water to a depth of 22 cm. On 12 April I provided a large sample of living potential prey netted from a seasonal pond in Leon County, Florida. The sample included mostly odonate (dragonfly) nymphs, crayfishes, and approximately 150 larval amphibians, chiefly *Rana sphenoccephala*, *Pseudacris* spp., and *Ambystoma talpoideum*. Amphibians measured 20–60 mm in total length (TL) and comprised ca. 80% of the sample biomass. Within 30 minutes, only three small beetles remained uneaten.

Subsequently, I experimentally introduced tadpoles to three other adult *Deirochelys* collected in northern Florida. From May–August 2000, an adult female (170 mm PL; Franklin County), whose fecal analysis indicated a typical diet of aquatic arthropods (crayfish, *Procambarus* sp.; aquatic hemipterans, *Ranatra* and *Pelocoris*), consumed the following tadpoles in captivity: 7 very large *Rana grylio* (100 mm TL, 10 g mass; body girth exceeded turtle's head diameter), 2 *R. sphenoccephala* (20, 85 mm TL), 1 *R. clamitans* (45 mm TL), 8 *Acris gryllus* (25 mm TL), 1 *Hyla chrysocelis* (55 mm TL), 42 *H. femoralis* (30 mm TL), 2 *H. gratiosa* (50 mm TL), and 34 *Gastrophryne carolinensis* (25 mm TL). Many of the more advanced tadpoles bore hind legs. The turtle also ate a juvenile *Bufo terrestris* (20 mm body length).